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INCENTIVES FOR UNDERTAKING ON THE JOB TRAINING

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INCENTIVES FOR UNDERTAKING ON THE JOB TRAINING

There is a general perception that Canadian employers do not provide "sufficient" training and that Canadian workers are reluctant to undertake industrial type training. Economists tend to feel uncomfortable with such notions because they may imply that "wrong" decisions are persistently made, including by people whose livelihood may depend on those decisions, and even when they are "informed" about what is the "correct" decision. Instead, economists prefer to analyze the problem as one of the parties likely making correct decisions given the constraints that they face. The constraints are such, however, that they may lead to decisions that are optimal from the perspective of each individual decision maker, but they do not necessarily add up to decisions that are optimal for them as a group or for society as a whole.

The purpose of this paper is to analyze training decisions in that regard. The emphasis is on identifying well defined market failures that may lead the private parties to underinvest in training.[1] Situations in which the private actions of individuals and firms do not result in an outcome that is best for society as a whole are referred to be economists as "market failures". Thus the purpose of this paper is to identify and assess the importance of potential market failures in the market for training. Following an explanation of some important concepts used in the paper, the paper provides a discussion of training as a current policy issue. The potential for market failure is then discussed, followed by an analysis of the appropriate role of government, employers, and employees in the face of such potential market failure. The paper concludes with a discussion of some unanswered questions and research needs.

Some Key Concepts

The focus of the paper is on "on-the-job training" (OJT), which includes both formal and informal training (and, indeed, retraining) undertaken in conjunction with work activity. Such training may range from "learning by doing" through the accumulation of work experience to formal instruction in job-related skills. Usually on-the-job training takes place at the workplace, but in some cases it may occur at special training sites. As this explanation of the concept makes clear, it is difficult

to provide a definition of OJT that is precise and that applies in all circumstances. However, in general, on-the-job training differs from formal schooling and vocational education or training in several ways: OJT usually follows schooling, is more specialized, often relating to a specific job, and involves the employer in decisions regarding the content and duration of training.

A second important concept is that on-the-job training decisions are essentially investment decisions, involving incurring current costs in the expectation of future benefits or returns. The costs typically involve the time of trainees as well as that of co-workers, supervisors and possibly specialized instructors involved in the training process as well as "breakage" (including perhaps lost customers) due to inexperienced personnel. The benefits take the form of a worker who is more productive than would have been the case in the absence of training.

In assessing various potential investment decisions, it is useful to calculate the rate of return on the investment. When, as will typically be the case, the magnitudes and timing of the costs and benefits are uncertain, the expected rate of return can be calculated using the anticipated costs and benefits. The expected rate of return provides a basis for comparing training investments to other possible uses of society's scarce resources -- such as other forms of investment in people (education, literacy programs), investments in physical capital (airports, highways, hospitals) and investments in new knowledge (research and development). Investments with payoffs that are highly uncertain will generally require a higher expected rate of return to compensate for the additional risk.

A third important concept is the notion of a market for training. For formal training programs, the nature of this market is evident. Individuals and/or employers can purchase training from the institutions providing these services. Both the prices of these services and the amount of training purchased are potentially observable. However, for informal on-the-job training which takes place in conjunction with or as a by-product or work activity, the market is implicit rather than explicit. By choosing the amount of time and effort devoted by supervisors and co-workers to orienting and monitoring new staff, firms influence the amount of informal training provided to employees. These choices by firms determine the supply of workplace training available to workers. Similarly, workers choose

among jobs with differing amounts of training and associated earnings streams. In general, jobs with a large training component are expected to have lower initial wages but more rapid earnings growth than jobs with a small training component. Workers' choices among these alternatives determine the demand for training.

The interaction between the choices made by employers and employees determines the amount of training which takes place at the workplace. This implicit market which exists for on-the-job training is similar to the implicit markets that exist for other job characteristics -- such as workplace safety, working conditions and flexible working hours. The fact that the market is implicit rather than explicit does not make it any less important to society or to the parties involved. However, this fact does make it difficult to determine the amount of informal workplace training which takes place, the costs of that training and how these training costs are financed.

These concepts can be used to restate the central theme examined in this paper. As noted previously, there is a widespread view that too little workplace training occurs in Canada. Leaving aside for the moment the problems associated with determining the amount of training that in fact takes place, there are two possible sets of reasons for this apparent (or at least perceived) state of affairs. One is that training is not a worthwhile investment compared to other investments available to employers and employees. That is, the private rate of return to the parties is not sufficiently high to warrant investing in training. If this is the case, then unless there are some social benefits from training over and above the benefits accruing to the employers and employees (and therefore taken into account in the parties' rate of return calculations), the market is producing the socially desirable result -- little investment in training. In this case public policies to encourage training would not be warranted because these policies would divert scarce resources to an activity with a low social return.

The other possibility is that expenditures on training are in fact worthwhile (i.e. produce an expected rate of return to society at least as great as that available on other investments) but that there are barriers that prevent either employers or employees (or both) from undertaking training investments or capturing the return from these expenditures. In this case there is a market failure in the market for workplace training -- because of these barriers (or sources of market failure) an

investment which is socially worthwhile does not result from the private decisions of the parties involved. In these circumstances there may be a rationale for public policies to encourage training.

CURRENT POLICY EMPHASIS

Changes on both the demand and the supply side of the labour market have put considerable emphasis on training to deal with the adjustment consequences from these changes. As well, recent changes in specific labour market policies, and in general policy emphasis have important implications for training initiatives.

Demand Side Changes

On the demand side, the pressures have emanated from such interrelated factors as international competition, industrial restructuring, plant closings, permanent displacements, privatization, subcontracting, technological change, and the recently negotiated Canada-U.S. free trade agreement. At the workplace, these changing demands have been manifest in changing workplace practices such as broader job classifications, multi-skilling to do a variety of tasks, flexibility in the use of the workforce, employee participation, and pay-for-knowledge systems whereby workers are paid for the knowledge and information they embody and not necessarily for the specific tasks they perform.

Supply Side Changes

On the supply side there have been equally dramatic changes, mostly associated with the changing nature of the workforce. The labour force participation of women, especially married women, continues to increase and the two earner family is now the norm and not the exception. The aging of the baby boom has shifted emphasis from training of youths to recurring training and retraining of adults, and to the training needs associated with lateral transfers as promotion opportunities are clogged by the middle-age baby boomers. Immigration no longer provides an unlimited pool of skilled labour, putting more pressure to train an indigenous workforce.

Compensation and Workforce Practices

With respect to the matching of supply and demand there have also been numerous changes that have implications for training. Greater wage flexibility, gainsharing and other contingent compensation systems, and the possibility of larger skilled-unskilled wage differentials create the potential for greater rewards for training. More flexibility in collective agreements and decentralized collective bargaining creates greater potential for training to be geared to specific local needs. Pay-for-knowledge systems create the potential for greater rewards for training. Broader job classifications and job enlargement create a demand for multi-skilling to do a variety of tasks. Employee involvement in decision making and job design place a premium on training and understanding the whole workplace.

Specific Policy Interventions

Certain public policy interventions also have potentially important implications for training. Affirmative action initiatives of employment equity put pressure on employers to train designated group employees if they are hired from outside the firm, and to upgrade them internally if they are promoted from within. Training may be a viable mechanism to help meet the growing requirements to "reasonably accommodate" the needs of disabled workers and the return to work after maternity leave. Workers' compensation reforms are increasingly emphasizing vocational rehabilitation and the reasonable accommodation of disabled workers, with obvious implications for training. Welfare reform is increasingly emphasizing "workfare" and enrollment in training to reduce dependency on welfare. Recent unemployment insurance reforms involve a reallocation of funds from unemployment insurance towards training and mobility under the Canadian Jobs Strategy (CJS) program.

Wage fixing legislation can reduce training by inhibiting the payment of lower wages in return for enhanced training. In the equal pay area, for example, Elizabeth Sawhill states; (1973, p. 394) "Equal pay laws are not very helpful...they tend to reduce the training alternatives available to women, which is a major source of the sex differential." In the minimum wage area, there is some empirical evidence from the U.S. indicating that minimum wages reduce on-the-job training

(OJT) and encourage younger people to remain in school longer and this may lead to reduced subsequent wage growth (Hashimoto 1982, Leighton and Mincer 1981, Mincer 1984), albeit based on Canadian data Simpson (1984) did not find minimum wage floors to have a significant effect on training.

General Policy Changes

At the broader policy level there are also changes in emphasis that can have important implications for training. Specifically, there appears to be a shift in emphasis from income maintenance programs (e.g., U.I., welfare, regional development) which can inhibit change in the direction of market forces, and towards programs like mobility and training which are in the direction of market forces. There is also an emphasis in competing in the global economy on the basis of high value added products that require skilled workers, rather than trying to compete on the basis of a low cost workforce, given the competition from newly industrialized countries with labour costs that are around one-fifth of those in Canada. In the training area itself there is increased emphasis on using the private sector to provide OJT to meet skill shortages, rather than using training to serve equity purposes of helping the disadvantaged.

There is also increased concern about Canada's recent productivity slowdown especially when compared to our major trading partner, the U.S. As indicated in Lendvay-Zwickl (1988,p.9), between 1970 and 1982 cumulative productivity growth had been similar between Canada and the U.S. However by 1986, U.S. productivity growth was well ahead of Canada's. At the same time, Canadian compensation costs (including fringe benefits and adjusted for the exchange rate) rose from about 80 per cent of those in the U.S. in 1985 to about par with the U.S. by 1988 (Capdevielle 1989 p.12). These changes relative to the U.S. -- our productivity slowdown and our rising compensation costs -- are creating concerns because they are coming just at the time when we are embarking on free trade with that country.

IMPLICATIONS FOR TRAINING

These interrelated changes in the demand and supply side of the labour market, as well as in various workplace practices and in specific labour policies as

well as general policy emphasis, all have potentially important implications for training. Specific implications include: (1) the need for training for both the "upside" adjustments (skill shortages, new demands) as well as the "downside" adjustments (job changes, permanent displacements), (2) basic skill training -- to "learn how to learn" -- to form the basis upon which to build subsequent retraining, (3) flexible training modules that facilitate responding to the rapidly changing circumstances and that facilitate constant retraining and lifelong learning, especially for the aging workforce, (4) a sensitivity to the special training needs of groups such as the disabled or older workers, (5) an emphasis on multi-skilled training to do the broader range of tasks a typical worker is likely to face given the greater number of job changes they are likely to confront over their lifecycle and the broader array of tasks they are likely to face given the trend towards job enlargement and the reduction in job classifications (6) in the evaluation area an increased emphasis on the effect of training on reducing skill shortages and on the competitiveness of the firm, rather than the usual emphasis on the effect on the earnings and employability of workers or on subjective case study evaluations of particular programs.

These basic background changes and the associated implications for training form the backdrop for the analysis of the appropriate incentives to ensure the optimal amount of OJT. The next section deals with the potential for the unregulated market to ensure the optimal amount of such training.

COMPETITIVE NORM AND OPTIMAL GENERAL AND SPECIFIC TRAINING

Under certain conditions (described below), the private decisions of employers and employees should yield the optimal amount (quantity and quality) of OJT just as any other investment. This is illustrated in the "classic" discussion of specific and general training (Becker 1964, Mincer 1962).

Specific training is training that is usable only in the firm that provides the training. It may involve orientation to the specific company, or training on particular equipment, or understanding the idiosyncrasies of the company. It enhances the productivity of the trainees, but only in that company; if the trainee leaves or the firm closes the skills are lost. The employer has the incentive to pay for the training because the employer reaps the returns in the form of higher

productivity. Employees have no incentive to pay for such firm specific training because they cannot benefit from their enhanced productivity in the form of higher wages since their training does not command a premium in the external market since it is usable only in the sponsoring firm.

General training, in contrast, is training that is usable in other firms. Hence, other firms are willing to pay a premium to attract those so trained. In these circumstances, firms that provide such training are not willing to pay for it because they still have to pay the market wage premium to prevent their employees from being bid away by other firms. They would be double paying by paying for the training and for the wage premium to retain their trainees. In such circumstances, the trainees should have an incentive to pay for the general training because they will reap the returns in the form of higher earnings.

An important intermediate case is that of industry-specific training in which workers acquire skills that are usable in other firms in the same industry but not usable outside the industry. Even if the training were industry and not company specific, the trainee would have an incentive to pay for the training since all firms in that industry would bid for the services of the trained worker. Of course the amount that the trainee may be willing to pay may be reduced somewhat by the fact industry specific skills may be more risky given that their use is limited to that industry.

The usual way for trainees to pay for OJT would be to take a lower wage during the training period. Some companies may even specialize in training, providing it in return for a low wage workforce. Many occupations (e.g., medicine, law, apprenticed trades) may have a built in training component to them, whereby low wages are paid in the internship, articling, or apprenticeship phase, and subsequent rapid wage growth occurs after the training period.

Of course, most training has both general and specific components, in which case the costs should be borne by both employers and employees since the benefits will be reaped by both.[2] In a well functioning market, impersonal market forces ensure that those who benefit from training pay for the training and the private decisions of participants thereby yield the optimal amount of training. The conditions under which market forces will lead to the socially desirable

amount of training being undertaken play an important role in the remainder of the paper, and are described briefly here.

Conditions for Socially Optimal Training

One important condition is that both parties are as fully informed as possible (given the state of knowledge) about the costs and benefits of training. This does not imply that there is no uncertainty about the future. However, it does require that both parties have access to the same information. If they are uncertain about the outcome of training investments, they are equally uncertain.

A second requirement is that the costs and benefits of the training activity to the direct participants (employers and employees involved in training) also equal the costs and benefits to society. That is, training does not involve any "externalities" or third party effects -- such as benefits accruing to or costs imposed on individuals or employers not directly involved in the training activity. Externalities result from a divergence between the private and social costs or benefits of an activity* and the absence of such divergences is necessary for private market decisions to yield socially desirable outcomes.

A third necessary condition is that markets are (perfectly) competitive; that is, that the number of buyers an sellers participating in the market is sufficiently large that no participants control the market price. Competition in the labour market ensures that workers with general skills receive a wage which reflects the market value of these skills.

A fourth general requirement -- which is particularly important to this discussion because of the investment dimension of training decisions -- is that both parties have access to credit at the market interest rate. This condition is usually referred to as "perfect capital markets" in the jargon of economists.

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*Immunization against infectious diseases is an example of an activity for which private and social benefits diverge. When an individual immunizes, a private benefit – reduced likelihood of contracting the disease – is received. However, other individuals also benefit from the immunization because they are now less likely to contract the disease. Thus the social benefits from immunization exceed the private benefits. Similarly, pollution of the environment is an example of an activity for which the social costs exceed the private costs incurred by the polluting party. In the presence of such externalities, private market outcomes will generally not be best for society as a whole.

The role of these conditions in ensuring the socially desirable amount of general training may be briefly noted. If workers are fully informed about the costs and benefits and have access to credit at the market interest rate, they will be willing and able to invest in general training providing the rate of return exceeds the market interest rate. Since this is the same rule governing other investments such as those in physical capital, this ensures that investments which are privately worthwhile are undertaken and vice versa. In the absence of externalities, the implication is that socially worthwhile investments will be made and investments with a low social return will be rejected. Competition in the labour market ensures that workers will reap the benefits of the training in the form of higher earnings; employers who do not adequately compensate trained workers to reflect their higher productivity will lose these employees.

A further condition -- relating to job mobility -- is required for the socially desirable amount of firm specific training to be undertaken. In particular, the employer will be willing to invest in specific training providing the worker is expected to remain with the firm for a sufficiently long period that the benefits of the training will be received. The role of job mobility and turnover in affecting the incentives to train is discussed next.

Job Mobility and the Incentive to Train

Job mobility plays an important role in the economics of training. As discussed above, firms will usually not be willing to finance general training if workers are mobile because the employer would incur the costs but not receive enough of the benefits of the investment. However, if workers are not very mobile because of costs of changing employers -- for example due to the loss of seniority-related benefits such as pensions and paid vacations -- then the employer's reluctance to finance general training is weakened. Firms may thus be willing to finance such training if there are financial, moral or legal bonds which tie workers to the employer providing the training.

An example of a legal contract binding the employee to the employer for a specific time period is the Regular Officer Training Plan utilized by the Canadian Armed Forces (CAF) for officer training. Under this contractual arrangement (with which one of the authors of this paper is very familiar), the CAF provides expensive

general training (a university education, clearly useful to many employers) together with additional military training some of which (e.g. leadership and management skills, pilot training) is useful in civilian employment. In return the employee agrees to remain with the CAF for a minimum period of time following the training.

Although this is an extreme example, mechanisms which make changing employers costly -- such as pensions and other forms of deferred compensation or a moral commitment to remain with the firm providing the training -- may also result in general training being provided by employers. The Japanese system of lifetime employment for certain employees carries with it an understanding that these workers will remain with the firm until retirement. Among these workers job mobility is very low. As a consequence, there is considerable incentive for Japanese employers to finance general training for this category of employee.

The amount of job mobility also affects the employer's willingness to finance specific training. If turnover is high in a particular industry or among a particular type of employee, employers will be reluctant to provide specific training even though this training does not increase the value of the workers to other firms. There is too great a risk that the trained worker will quit before the payoff from the training investment has been received.

Uncertainty about the duration of the employment relationship creates an incentive for employers and employees to share the costs and benefits of specific training (Donaldson and Eaton, 1976; Hashimoto, 1981). During the training period, the firm pays a wage in excess of the worker's contribution to the value of output (but less than would be the case if the employer financed all the training costs). Following training, the firm pays a wage below the worker's contribution to output (but higher than if training were fully financed by the firm). During training the employee receives a wage below that which could be earned in alternative employment not involving training. In return, following training the worker is paid more than could be earned elsewhere. Thus both parties incur costs during the training period and subsequently both receive a return on this investment.

This arrangement whereby the costs and benefits of specific training are shared has the advantage that both parties have a stake in maintaining the employment relationship. Following training, the worker is reluctant to quit

because earnings in the firm providing specific training exceed those that could be obtained elsewhere. Similarly, the firm is reluctant to lay off the trained worker because his/her contribution to output exceeds the wage. Because both parties receive a return on their investment, each reduces the risk that the other will sever the employment relationship. In contrast, if specific training is financed by the employer alone, the trained worker has less incentive to remain with that employer and the risk that the employment relationship will end falls entirely on the firm.

Although sharing the costs and benefits of specific training is the best arrangement from the point of view of the incentives facing each party, it is nonetheless clear that high turnover in the labour market -- whether initiated by employers or employees or due to the actions of both -- can be an important obstacle to training. Firms will be unwilling to provide expensive training to workers they regard as likely to quit, and employers wishing to provide substantial training are likely to adopt recruiting, hiring and compensation practices designed to attract "stable" employees. Similarly, workers will be reluctant to accept jobs which offer low wages during the orientation and training period but promise high wages subsequently if there is considerable risk that they will be laid off. This reluctance will be especially great if the training is largely firm specific and thus of little value to other employers. Workers wishing to acquire additional skills through on-the-job training and thereby increase their future earnings will seek out employers who have developed a reputation for providing a high degree of job security.

POTENTIAL FOR MARKET FAILURES IN ENSURING OPTIMAL OJT

Market failures and departures from the competitive norm can prevent the market from yielding the socially optimal amount of training. In this section we go through the litany of potential market failures in general terms and then apply them to the market for training. Even if they are not relevant for training, we analyze the market failure argument because there is usually some insight to be had from each market failure argument. Such an analysis is important not only for pinpointing how markets may fail, and hence where policy intervention may be warranted and what type of intervention may be warranted. It is also important for illustrating where markets may operate, often in subtle fashions, and often to undo the effects of well intended policy interventions. As many sins can be made in ignoring how

markets operate, as can be made in believing that markets can take care of all of our social problems.

Externalities and Poaching

Externalities occur when the actions of one party affect the utility of consumers or the production possibilities of producers and the market does not automatically extract payment. In the case of training, externalities may occur because firms may provide generally usable training, but not be able to appropriate the full returns because the trainees may go to other firms that pay a wage premium for the trainees rather than provide training. Such firms are said to "poach" trainees, albeit that seems a misnomer since they are paying through the wage premium used to attract the trainees. In fact, in such circumstances, it is the trainees who are appropriating the returns through competitive wages and who are not bearing the costs, for example by not taking a lower wage rate during training. If this is the case then the question becomes: why are firms not able to extract payment for training, perhaps by paying a lower wage in return for providing training? (Possible answers to this question will be provided later).

The classic solution to the externalities problem is to impose a tax equal to the amount of the negative externality or provide a subsidy equal to the amount of the positive externality, in this case the amount of training that is provided. This is the rationale for the tax-levy schemes that have so often been suggested as a solution to the poaching problem.[3] That is, all employers in the industry would be subject to a training tax (e.g., one percent of payroll) and those that provided training would be eligible for a subsidy, perhaps in the form of a tax rebate.

In reality, whether the tax to pay for the training subsidy comes from other employers who use the training or from general tax revenues is largely irrelevant from the perspective of ensuring that the optimal amount of training is provided. Ensuring the optimal amount of training is accomplished by the subsidy to the producers of training. The source of the funds only has distributional or equity implications. For distributional reasons it seems only fair to tax those who use the training, but this is not as important for ensuring the optimal amount of training as is providing the subsidy to those who pay for the training.

Of course, determining the correct amount of the subsidy is not an easy task, and in fact may be impossible in any practical sense. It may be virtually impossible to disentangle company specific training (which does not merit a subsidy since the company appropriates the returns) from general training which is not financed because of the poaching problem (which still begs the question of why trainees do not pay for such training). It may also be impossible to disentangle OJT from the normal production process, since OJT and production are often joint products of the firm.[4] In such circumstances, in applying for subsidies, firms have an incentive to engage in strategic behaviour and overstate the amount of OJT they provide, or apply for subsidies for training that they would have undertaken in the first place, perhaps because it was company specific or because they used other devices to reduce turnover and hence the loss of general or company specific training. Such procedures could include deferred or backloaded wages (wage profiles that are steeper than productivity profiles) or "efficiency wages" (wages above the competitive norm), both of which would deter unwanted turnover.

The problem of determining the amount of training that is provided in a job may also be a problem for individual workers if they are to "buy" generally usable training, perhaps by accepting a lower wage during the training period. This in turn may be one of the factors inhibiting trainees from paying for generally usable training. Nevertheless, the complexities imposed by training being a joint product provided by the firm should be no more difficult than determining the "value" of the host of job characteristics such as working conditions, risks, and fringe benefits -- all of which are valued by employees when they take on particular jobs. Given the informal and formal information networks and the long run reputation effects on firms, it is more likely that employees can elicit correct information on the amount of training that is provided, than could a government agency responsible for doling out training grants.

In summary, the externality or poaching problem arises not so much because markets do not exist to appropriate the returns from training and hence to provide the correct incentive structures to ensure that the optimal amount of training will exist. The problem is more one of information and of why individual workers may not pay for generally usable training since they appropriate the returns. As an aside, this issue does not occur as much in countries like Japan

because lifetime employment with a particular firm in essence makes generally usable training company specific and ensures that the company will provide and pay for the training. Poaching is not an issue when employees stay with the firm that provides the training.

Inability to Finance Training

The previous discussion suggested that the "poaching" problem should not arise for general training to the extent that trainees are willing to pay for the training, the benefits of which they will appropriate in the form of higher post-training earnings. The question then becomes: why do employees not seem willing or able to pay for general training, perhaps in the form of a low wage during the training period? One reason was already given: they may have difficulty determining precisely the amount of OJT they are purchasing. However, this was not seen to be an insurmountable information problem, certainly no more so than the valuation of other job characteristics that seems to be done in the regular course of events.

A potentially more severe problem is the inability of employees to pay for the training. In many circumstances, they simply may not be able to afford to pay for training that entails a lower wage during the training period. This could be the case, for example, if they were offered a period of training that interrupted their normal work arrangement or if they were offered a job that paid little but had a large training component and hence high subsequent wage growth. They may simply not be able to afford such investments even if they were sound investments. This is especially the case because, of course, there is always a risk to such investments.

The risk is compounded by the fact that so many of the elements are beyond their control. On the demand side it depends upon whether the demand for their new skill will be sustained -- an uncertain factor given rapid changes in technology, market conditions and industrial restructuring. On the supply side it depends upon whether there may be a flood of others who also may undertake the training, creating a glut in the market and setting up a possible "cob-web" cycle. It may also depend upon the availability of substitutes for the skill -- for

example, immigration or capital equipment or the use of unskilled labour and job redesign.

Workers may also be ill suited to be able to diversify against the risk because if they lose their job they have also lost their training investment. Of course, such training may reduce their likelihood of losing their job, but if they do, then they have lost both their basic employment income and their human capital investment, both of which are tied together. Investing in "themselves" means they have put all of their eggs in one basket. Purely from an investment portfolio point of view, they would be better off diversifying their "portfolio" by investing in other workers who are most likely to replace them if their skill becomes obsolete! Realistically, they may well be wise to invest in a house or other assets that are not so inextricably tied to their basic employment income.

Imperfect Capital Markets

Even if the investment does not appear risky, and it is obviously a worthwhile investment so that employees should be willing to borrow the money to finance the investment, this may not be possible through normal capital markets. This is so because it is not possible to use one's human capital from the investment as collateral for a loan. Lending institutions cannot accept human capital assets since they cannot repossess them (unlike a car or house) should the lender default. As well, there is a "moral hazard" problem in that the borrower has a substantial degree of control over the returns from the investment. The lending institution can do little against a borrower who decides not to work and produce the benefits from the human capital investment. Rightly or wrongly we have essentially abolished the debtors' prison. In such circumstances of not being able to use human capital as collateral for a loan and given the potential moral hazard problem that may prevail, employees may not be able to use the capital markets to finance investments in training.

Wage Rigidities

Wage rigidities may also inhibit employees from accepting lower wages in return for training that would lead to subsequent wage growth. As indicated previously, there is some U.S. empirical evidence indicating that minimum wage

legislation may have such an effect (Hashimoto 1982, Leighton and Mincer 1981, Mincer 1989) as may equal pay laws (Sawhill 1973) or wage floors set by unions (Mincer 1984).

To the extent that this is the case, however, it seems an easy obstacle to overcome by simply exempting training periods from the wage fixing legislation. Such is commonly done with respect to minimum wage laws and equal pay laws. Of course, this is likely to be feasible only with respect to formal training programs. It would be much more difficult, if not impossible, with respect to informal OJT that is often provided as a natural by-product of the job.

There is also a question as to whether training is a common component of many of the dead-end jobs that tend to characterize the minimum wage sector or of many of the female dominated jobs for which equal pay legislation is relevant. In the minds of some it may stretch credibility to argue that people are denied training opportunities by being denied jobs that otherwise would pay below the minimum wage. Wage fixing may even enhance training by encouraging employers to upgrade their higher paid workers so that their productivity is commensurate with their pay.

Perhaps a balanced assessment is that wage rigidities may somewhat inhibit workers from accepting lower wages in return for OJT and subsequent higher wage growth. However, the effects are not likely to be substantial. If they are substantial, then any adverse effect should be easy to correct by exempting workers in training programs from the wage fixing regulation.

Constraints Imposed by Collective Agreements

In theory, collective agreements can impose constraints that may inhibit the extent to which OJT can occur. As indicated previously, union wage floors may make it difficult for employees to accept "wage cuts" in return for training. Firms that have to pay union wage premiums, generally acknowledged to be in the neighborhood of 10 to 25 percent, will want (and be able) to hire qualified workers, rather than provide expensive training internally. It is empirically well established that unions tend to create a more egalitarian wage structure, getting wage premiums for all workers, but reducing the return to human capital investments like

education or training. That is, unions raise the wages of workers with little education or training by a much greater percentage than they raise the wages of workers with substantial amounts of human capital. Thus in the union sector the return (in the form of higher wages) from additional training is lower than in the nonunion sector. In such circumstances, there will be less incentive for unionized workers to acquire additional training, either on the job or off the job.

Industrial union contracts also tend to strictly regulate the initial training period, usually to a probationary period of 90 days, after which a post probationary wage increase occurs. Unions are concerned that longer periods may indefinitely leave the employee in limbo, not knowing whether they have a job. Continuation of the probationary period is seldom possible for fear that it will be used by employers to keep employees indefinitely on probation. The resultant all-or-nothing choice, however, means that employers may not be able to continue probationary training for workers who are not yet up to standards but for whom additional probationary training may help in that regard.

Collective agreement provisions regulating the ratio of apprentices to journeyman and masters, and restricting the tasks to which apprentices can be used, may discourage employers from using apprentices. This may also be the case if apprentice wages are set unduly high.

In fact, however, we know very little about whether collective bargaining practices impose constraints that inhibit the development of training in such fashions. Even if they do, this may be offset by the fact that unions may bargain for additional training for their members, especially as an alternative to redundancy or layoffs. As well, it is unlikely that the constraints imposed by collective agreements would be substantial if they worked against the interests of employees in acquiring training. In such circumstances, unions should be quite willing to negotiate clauses allowing lower wages for workers in training periods or the flexible use of trainees.

Structural Bottlenecks

The lack of properly trained personnel may create structural bottlenecks in the production process and these in turn may inhibit the employment of other

workers (Judy 1970) who are dependent upon the existence of that trained person for them to conduct their own work. The lack of tool and die makers, for example, may mean that a whole production line cannot operate. The lack of a specifically trained nurse may mean that a whole health function cannot be provided or has to be postponed.

In perfectly competitive markets, employers have an incentive to ensure that such structural bottlenecks do not occur since they lose production and hence profits. However, it is not obvious that they take into account the full social costs of such production bottlenecks. For example, the bottlenecks may lead to the unemployment of complementary workers and it is not obvious that such workers have a mechanism to encourage the training of those key workers upon which their own jobs depend. It is stretching the credibility of market mechanisms to argue that such workers would take a wage reduction to provide the funds for the training of the key personnel upon which their own jobs depend.

Similarly, the training of workers for higher positions within the firm may vacate jobs that can be filled by others, including the unemployed. It is not clear that market mechanisms exist whereby the unemployed can "bribe" incumbent workers to undertake the training and thereby vacate lower level jobs that can now be filled by the unemployed.

Flexibility, Adaptability, Reversibility

Flexibility and adaptability are the hallmarks of the adjustment pressures that are emanating from increased global competition, technological change and industrial restructuring. The just-in-time delivery system of the product market, rightly or wrongly, is being translated into a demand for a just-in-time workforce in the labour market.

This, of course, puts a premium on training that is flexible and adaptable to the more rapidly changing circumstances. Such training is likely to involve a basic general training component of "learning how to learn" as well as subsequent flexible modules or building blocks of recurring education and retraining in specific tasks.

The market should have no major problem in responding to the provision of training for such changing training needs, albeit information problems (discussed subsequently) may inhibit such adjustments. Knowing that a premium exists for training that facilitates flexibility and adaptability should be a proper incentive for workers to want to receive such training and for employers and training institutions to provide it.

In the training area, however, there may be problems that inhibit markets from developing fully to meet these demands. Specifically, workers may be willing to pay to have the option to train or retrain, should such a need become necessary. Even if they were fortunate enough not to have to exercise that option (i.e., for their skill to be obsolete) they may be willing to pay something to have the facilities available as insurance should they have to exercise that option.

The potential for that to be a problem is particularly severe in situations where the decision not to invest is largely irreversible. For example, if individuals have not invested in basic general education or training, then they may not have the foundation upon which to subsequently retrain. If training institutions are allowed to deteriorate, or our stock of trained human capital deteriorates, it may not be feasible to reverse this decision in any reasonable time to meet new training needs.

While such arguments are theoretical possibilities for market failure, they are likely of limited practical relevance for the training area. They are likely to be more appropriate for possible market failures in environmental issues or natural resource extraction areas, where option demands and irreversible decisions are more likely. Cutting certain forest areas or depleting reproducible fish stocks are likely to lead to potentially more severe irreversible investment decisions, than is allowing our training stock or training institutions to deteriorate.

Adjustment Problems

The development of markets for training may also be inhibited by adjustment problems, some of which have already been mentioned. Cobweb adjustment cycles leading to alternating periods of shortage and then oversupply are possible, especially in situations where there are lags in the training response,

and uncertainties over how other sectors will respond. Rapid supply responses in the training area may be impeded if the stock of training facilities or if the basic training component of trainees has deteriorated. Uncertainties over the permanencies of the training demands and of the availability of substitutes may prevail given the rapidly changing market conditions and the information asymmetries that may exist between workers and firms.

Such adjustment problems and uncertainties, however, are ones that prevail in most markets. They plague the market for training just as they plague other markets and while there may be qualitative differences, there are unlikely to be quantum differences that prevent markets from operating in this area. More importantly, they are problems that will prevail for governments or public institutions as well as for private sectors (employers, employees) in this area.

Information Problems

One area where private markets may "fail" is in the provision of information for the private parties to make their own decisions. This is so because information has "public good" characteristics:* (1) once the service (in this case information) is provided, it is equally available to all users and use by one user does not detract from the availability to others, and (2) it is not possible to exclude nonpayers from using the service. In such circumstances, the private market will not provide the optimal amount of the service because it is not possible to exclude nonpayers once the service is available.

To be sure, private markets do develop for the provision of specialized information. Private parties could hire "agents" to inform them of human resource projections, training demands, and even the best type of training to take. This is feasible and done in large corporations, often through specialized consulting services, where the costs can be spread over a large workforce.

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*A public good is a commodity or service whose benefits to users are not depleted by an additional user and for which it is generally difficult to impossible to exclude people from its benefits, even if they are unwilling to pay for them. In contrast, a private good is characterized by both excludability (those who do not pay for the good can be kept from enjoying its benefits) and depletability (the commodity is used up when consumed by an additional user). National defence is a classic example of a public good. Because of the difficulty of excluding non-paying users, it will generally not be profitable for private suppliers to provide these goods. In order to ensure a socially desirable amount of public goods some form of collective provision is generally necessary.

However, for individual workers it would not pay to acquire such information on an individual basis, albeit it may well be economically sensible for them to pay their share for the public provision of such information. The information could be on such factors as: projections of occupational demands and the derived demands for training; projections of supply responses and information on the availability of training services.

Insufficient Innovations

Just as markets may fail to provide the socially optimal amount of information, so they may fail to provide the socially optimal amount of innovations in such activities as training. Like information, innovations have the twin characteristics of public goods: (1) once the information about the innovation is available, it is equally available to all parties and (2) it is not possible to exclude nonpayers from using the innovation. Alternatively stated, those who innovate in the training area bear the full cost of the innovation, including the cost of unsuccessful as well as successful innovations. However, they are unable to reap the full benefits because others can simply emulate their successful innovations, and, of course, not undertake the unsuccessful ones. Since the market does not enable those who bear the cost of innovations to reap the full benefits, then there will be a less than socially optimal amount of such innovations. In fact, there will be a perverse incentive for firms to hide information on successful training endeavours so that they cannot be emulated by competitors.

Patent systems, of course, are designed explicitly for this purpose with respect to inventions. Without patents, inventions would seldom occur because inventors would not be able to reap the full benefits, as others would simply replicate their successful inventions. Patents are not feasible with respect to innovative activities in the human resource development area, including training; hence a suboptimal amount of training innovation will occur.

Of course, some innovations will occur by accident. Others will give the innovating firm a lead in the market before competitors can catch up. Others may even market innovative practices, for example through consulting firms or by developing a reputation as an organization that innovates. That is, the market may

enable innovators to appropriate some of the benefits of their innovative activity, but as long as it does not enable them to appropriate all of the benefits, then a suboptimal amount of such innovative activity will occur, in this or in any other area.

Reluctance of Co-Workers to Train

A suboptimal amount of OJT may also result in situations where senior workers are reluctant to provide training to junior workers for fear that the junior workers may then replace them. This is part of the more general problem of trying to encourage co-operative behaviour on the part of employees, but it is particularly relevant in the case of OJT because much OJT is informally provided by the more experienced workers on the job. Understandably, they may be reluctant to train someone who could displace them. The senior worker may even have a perverse incentive to make sure that the junior employee does not receive any training that would pose a threat to the job of the senior employee.

The problem is even more general in that it can also apply to co-workers who are competing for the same job. They may have no incentive to engage in co-operative behaviour with their fellow workers, and in fact may have a perverse incentive to make their fellow workers less productive.

These incentive problems can be ameliorated by providing a reasonable degree of job security to those who provide the training. As well, reward structures can be fashioned to reward those who train others, including their own replacements. Nevertheless, perverse incentives can be created between trainers and trainees or between fellow trainees and these could lead to a reluctance to train. It should be emphasized, however, that these are incentive compatibility problems that arise whether the training is provided through an unregulated market or indeed by government subsidies or provision of training.

Political Constraints

The previous discussion focused on how private markets may fail to yield the socially optimal amount of training and hence where government intervention potentially may be warranted. Government intervention in determining the amount

of training that is provided may also be justified on the basis of other government constraints that are imposed elsewhere in the system. Specifically, governments have taken on an important role in income security and income maintenance through such programs as unemployment insurance and social assistance. Eligibility conditions are always involved in such programs. Under certain circumstances, it would not be unreasonable to impose training requirements as a condition for eligibility, especially for prolonged periods of benefits or when training is a viable vehicle to enable people to leave the roles of unemployed or social security. Sweden, for example, is renowned for enrolling its unemployed in training programs.

The interventionist strategy could go even further, for example, if governments regarded the provision of training as a necessary countervail to absorb the unemployment that may be created by government imposed wage fixing in such forms as minimum wages, equal pay, fair wages on government contracts or wage extension by decree. In other words governments may regard wage floors and training as complementary policies to induce competition on the basis of high productivity and value added, rather than low wages.

Governments have extensively subsidized general eduction systems, including higher levels of education. While there is some debate as to whether such support should change at the margin (e.g., higher tuition at universities, more support for public education) there is little debate over whether public subsidies should be eliminated entirely, and market determined fees-for-services charged, as is certainly possible. If such extensive subsidies are possible for general education, should they not be provided for training, especially since the education subsidies would otherwise distort decisions towards more formal education and less OJT which is not subsidized.

These could be thought of as economic "second-best" rationales which argue that once related prices are distorted elsewhere in the system (e.g., by income maintenance policies which distort the "price" of leisure, or by wage fixing laws) then it is not always optimal to follow first-best pricing rules elsewhere in the system (e.g., undertake training as long as the marginal benefit exceeds the marginal cost).

The danger, of course, is that this can be regarded as a blanket endorsement for funding market failure everywhere, since related prices are invariably distorted by imperfections elsewhere in the system. In the training area, its reasonable application is likely to apply to governments imposing training, even if not voluntarily undertaken by market participants, as a precondition for the receipt of other government support. Since governments will be a "provider of last resort" it is not unreasonable that they try to minimize the need for them to have to provide an ultimate safety net.

EQUITY AND DISTRIBUTIONAL CONSIDERATIONS

The previous discussion focused on reasons why private markets may fail to provide the efficient amount of training. Markets may also fail -- indeed are not designed -- to ensure an equitable or fair distribution of income, including income that is generated by human capital investments in training. Government intervention in market outcomes may well be justified on purely distributional or equity grounds, even if the distributional objectives conflict with the efficiency objectives. We may well agree as a society to have a smaller pie that is more equitably distributed than a larger one that is not equitably distributed. Legitimate social trade offs are involved between equity and efficiency, as with any other social goals.

It is important to emphasize, however, that equity and efficiency objectives need not clash in the training area, or in other areas of social policy. First, the relevant measure of efficiency in training is value added (i.e., the extent to which training improves a person's productivity), not final value. It is a distinct possibility that a given amount of training may do more to improve the productivity of an otherwise unskilled person than of an already skilled person, even though the skilled person may appear to benefit more by being well-trained at the end of the process. Given that the skilled person may be in the stage of diminishing returns with respect to absorbing more training, and the opportunity cost (foregone output) of training then may be high, is not obvious that the benefits of training more advantaged workers are likely to exceed the cost. Conversely, disadvantaged workers may be in the "increasing returns" portion of their "learning curve", and the opportunity cost (foregone output) of training them may be low. Obviously, it is an empirical proposition as to where the value added per dollar of

training is greatest. The point is that it is not necessarily greatest for more advantaged workers at the higher skill levels. They may do well with or without training, and only slightly better with than without. Training the disadvantaged could be both equitable and efficient.

Equity and efficiency objectives also need not always conflict because ensuring a degree of equity and fairness may encourage co-operative productive behaviour. Workers may be more willing to accept technological change and industrial restructuring if they are provided a degree of job security, perhaps by being retrained for the new position. They are more likely to train co-workers if their own job is not threatened. A high commitment workforce and identification with the well being of the enterprise (one of the goals of North America human resource managers) is more likely to result when employers also have a commitment to the well-being of their employees -- commitment is a two-way street. It is true that inequalities, for example in wage structures, may be necessary to provide incentives to train. But it is also true that providing certain safety nets and modicums of fairness may encourage co-operative behaviour.

As indicated, equity and efficiency objectives in the training area need not conflict if training the disadvantaged helps them in the long run to be self sufficient as opposed to dependent upon income support through such programs as unemployment insurance or social assistance. They may also be better off by being assisted through such programs as training, which enables them to ultimately help themselves to earn a living, rather than through purely receiving transfer payments, with their possible social stigma and dependence creating effects. Taxpayers may also have a preference in having their support provided in ways that encourage ultimate labour market work and self-sufficiency, rather than purely as transfers with their potential adverse effects on the incentive to work. Clearly, efficiency and equity considerations become interwined when donor and recipient preferences and longer run incentive effects are considered.

Even if equity and efficiency considerations do clash, as is likely to be the case at some extent, a legitimate social trade off is involved. Society, through governments, may well decide to use training to meet legitimate distributional objectives, even at the expense of some efficiency. The policy questions then become: how much are we willing to pay in terms of less efficiency to obtain the

equity goals and how do we achieve the equity goals in as efficient a fashion as possible?

ROLE OF GOVERNMENT, EMPLOYERS AND EMPLOYEES

The previous discussion highlighted how the private, unregulated market may fail to provide the socially optimal amount of training, for both efficiency and distributional reasons. Such market failures provide the potential rationale for government intervention. Whether government intervention is merited, however, depends upon whether an imperfect government solution is better than an imperfect market solution.

Governments will face many of the same problems of imperfect information and uncertainty and of determining the optimal amount of training. As well, they face many problems of their own including bureaucratic expenses and induced rent-seeking behaviour. And, they may crowd-out private sector activity that would have occurred in any case, especially when strategic behavior emerges to obtain subsidies.

In this section, we discuss the possible roles of government, employers and employees in the training area, in light of the previous discussion of the potential for market failure to ensure a socially optimal amount of training. We also emphasize, however, how markets in fact may operate in the face of actions by each of the actors.

Role of Government

As indicated, the failure of markets to ensure the socially optimal amount of training provide a theoretical justification for a potential role for governments. Whether governments have a practical actual role to play depends upon whether they can improve on the imperfect market solution. The degree of government intervention can vary from minimal intervention to strong intervention. The subsequent discussion will cover that spectrum, beginning with minimal intervention.

Minimal Intervention:

A minimal intervention strategy would basically restrict the role of government to removing any impediments that inhibit the private parties from making their own training arrangements, through the existing mechanisms of the market or collective bargaining. In the extreme, this would involve reducing legislative restrictions like wage fixing (or exempting trainees from such wage fixing) so that training could more easily be provided in return for low wages. In theory, it could involve removing the impediments that prevent individuals from using their human capital for collateral for a loan to finance training, albeit institutional arrangements for this (short of resurrecting debtors prisons!) are not obvious.

Even in a minimal intervention strategy, governments would also likely have a role in providing information that would facilitate private transactions through the market or collective bargaining. This role is justified on the grounds of the public goods nature of basic information, albeit even here markets for information obviously exist. The information would include demand and supply forecasts, as well as information on training facilities.

There would also be a role for governments to support innovative training programs, given the inability of the private market to enable those who bear the full cost of innovating from reaping the full benefits. The support could be in the form of subsidizing pilot projects or making awards for innovation breakthroughs. In theory allowing the patenting of such innovations would also solve the problem, but in practice it is not obvious the institutional arrangements for accomplishing this.

Medium Intervention:

The minimalist intervention strategy basically involves providing the institutional structure and "greasing the wheels" for private transactions. A slightly more interventionist strategy would do at least that, but also involve government intervention to compensate for other areas where the market may fail even though at best an "uneasy case" can be made that markets are in fact failing: the poaching problem that inhibits firms from undertaking training; the inability of workers to finance their own training; compensating for constraints imposed elsewhere in the

system such as through collective agreements; reducing structural bottlenecks; facilitating flexibility, adaptability and adjustment; compensating for the reluctance of co-workers to train fellow workers; satisfying the political constraint that governments will have to provide income maintenance support in any case; compensating for the distortions imposed by the subsidies to general education; and satisfying legitimate distributional or equity objectives.

In each of these situations a case can likely be made that markets do operate, at least to a degree. However, in each there is also likely to be at least some failure of the market to address the problem adequately. The sum total of each of these "uneasy cases" for government intervention may make a case for at least some intervention, even though no simple argument dominates. The total amount of intervention is likely to be small (leaving aside the question of how small is small!), directed at affecting decisions at the margin, and geared to intervention to remedy specific market failures.

For example, governments could implicitly accept human capital as collateral and provide loans for vocational training, just as they do for higher education. They could impose tax-levy schemes to compensate for poaching problems and they could subsidize specific types of training that reduce structural bottlenecks elsewhere in the system. Governments could also require training as a condition for the receipts of income support for some groups, and they could provide it to disadvantaged workers. Efforts should be made, however, to ensure that government activity does not simply displace private activity.

These are the policy margins where much of the current policy debate tends to occur, albeit the current debate tends not to focus on market failures, but rather on general perception of where training is desirable, independent of how markets may operate in these circumstances. In that vein, the medium intervention strategy could involve a refocussing towards government intervention in specific areas where market failures are likely to be more prominent. It should also be an integrated part of a positive labour market adjustment strategy that involves adjustment in the direction of, and not against, basic market forces.

Interventionist Strategy:

A stronger interventionist strategy would envisage government as a more active player, inducing training as part of a broader industrial strategy to encourage productivity and competitiveness. The role would not be restricted to cases of well defined market failure or even loosely defined market failures. It would be more proactive, supplementing and "topping up" market activities. The government would be regarded as an agent of employers and employees, with a direction to encourage training. Training and recurrent education would be regarded almost as a basic right, much as is basic education currently provided through the normal school system. A trained workforce would be regarded as part of the normal social infrastructure within which market transactions and collective bargaining are conducted.

It is difficult to evaluate such a strategy because it does not rest on conventional economic criteria. It is very much akin to an industrial strategy that envisages a very strong role for governments in engineering comparative advantages. In that vein, it should be judged as part of such a broader strategy.

Role of Employers

Canadian employers have long been accused of not having a training culture, which presumably means that they do not train "enough" and they do not tend to think of training as part of their overall strategic management decision making. The message of this paper is that the only way we can say that employers do not train enough is to focus on market failures that inhibit them from producing the socially optimal amount of training. A number of such possible failures were identified, especially the poaching problem for employers.

The poaching problem is likely to be a real constraint on North American employers because labour adjustment so often occurs through the external labour market, through layoffs and new hires, and increasingly through plant relocations, downsizing, industrial restructuring, subcontracting and temporary help agencies. Even the large organizations in North America are decentralizing and developing profit centres that encourage subunits to behave almost as separate plants, with internal transfer pricing in real dollars. (An exception is universities which seem bent on filling the void created by the demise of Soviet style central planning!)

This reliance on the external labour market for labour adjustment in North America is in contrast to the situation in Japan where labour adjustment, at least for the case of workers in large firms, occurs through the internal labour market of those large firms. Training is part of the culture of the organization at least in part because workers have a degree of lifetime employment security. Demand shifts are met in large part by retraining an existing worker and ensuring that they are multiskilled to do a variety of tasks, rather than seeking a "new match" through the external labour market.

While features such as lifetime employment and multiskilling sound enviable, there are disadvantages even from the perspectives of workers. In Japan, flexibility is attained in part through subcontracting to a low wage, female dominated sector where there is not employment security. The lifetime employment system demands a high commitment from its workforce; it often mandates internal transfers to new locations; and it usually requires retirement at age 55. Contingent compensation systems involving periodic wage bonuses, while enhancing incentives, can create considerable uncertainty and risks in earnings.

The pros and cons of these features, and the extent to which they are desirable and workable in North America continues to be an issue of lively debate. The current realities in North America, however, continue to rely on the external labour market for labour adjustment, and this tendency seems to be increasing with the emphasis on flexibility.

This has a number of implications for the role of employers in ensuring the optimal amount of training. First, the "problem" of poaching will continue; it may not even be a problem if it is part of the normal functioning of markets as training is bought and sold, with workers appropriating the returns and bearing the costs. Second, if employers are already buying and selling the optimal amount of training for their own needs, then government subsidies will largely be windfalls and induce them into other unproductive activities (e.g., engaging in unnecessary training to get the subsidy, "recycling" employees through training; incurring real resource costs to get the subsidies). Third, and in a more positive vein, in a market oriented system, employers have a viable role to play in the production and sale of OJT, even if it is a natural byproduct of their normal production process. Some may

even specialize in that "line of production", whether they are paid through government subsidies, fees for service (e.g., temporary help agencies), or by employees who accept a lower wage in return for the training.

Role of Employees

As discussed previously, the real puzzle with respect to the poaching problem is if employees are able to appropriate the benefits of OJT (by competitive wage premiums) what inhibits them from paying for the training, and hence for the optimal amount of training to occur? A number of possible answers were given: inability to finance; wage rigidities; constraints imposed by collective agreements. Yet they did not seem to add up to a convincing story of market failure in the area. This, of course, raises the possibility -- albeit counter to most impressions -- that they are investing in the optimal amount of training.

There are a number of policies that could facilitate the role of employees in ensuring that the optimal amount of training is provided. First, sound decisions require information on such factors as demand and supply as well as the availability of training and public support. "One -stop" information sources are important for sorting out the bewildering array of programs that may be available. Second, public subsidies for vocational education should parallel those for nonvocational education; we should not bemoan the reluctance of youths to undertake vocational education at the same time as we create financial biases towards nonvocational education. Third, constraints should be reduced if they unnecessarily impede workers from "buying" training, for example, by accepting a lower wage for training. Fourth, training loans should be considered, at least on par with those provided for general education. Fifth, options for retraining and recurring education should be emphasized, given the changing training needs, emphasis on multiskilling, and the aging of the workforce.

CONCLUDING OBSERVATIONS

The previous discussion highlighted that determining the appropriate incentives for ensuring the optimal amount of training required an understanding of how markets operate, or fail to operate, to provide training. The emphasis in the paper was on identifying possible market failures that inhibited the private parties

(employers and employees) from transacting in a fashion that would yield the socially desriable amount of training. A minimalist role for government was identified as: (1) providing the institutional structure and reducing the constraints to facilitate such private transactions, and (2) filling the gaps created by any well-defined market failures.

In the context of that discussion, a number of gaps in our knowledge were identified as impeding a full understanding of the possible existence of market failures and the appropriate role of the three main actors -- employees, employers and the government. Information on a number of issues would help guide policy in this area.

We know remarkably little about the extent of training that is provided in industry -- who trains, who receives the training, what is the nature of the training, and who pays for the training? How does training fit into human resource management in particular, and into strategic management decision making in general?

At the federal-provincial level we know little about the overlap of training functions. How do the different provinces relate to the federal Canadian Job Strategy program or other federal initiatives? What is the orientation of the different provincial initiatives? How much do the different provinces train under federal initiatives, provincial initiatives and purely private initiatives?

On the evaluation side, we know little about the effect of training on the performance of the firm. While there have been numerous firm-level evaluation studies of training, most have focussed on the subjective evaluation of short-term, managerial-professional training. We have little objective information on the success of longer term blue-collar OJT.

At the conceptual level, we have little information on on how training should fit in as an integral component of a broader labour market adjustment strategy. In fact, little thought has gone into the elements that should constitute such a strategy. Without having a clear picture of the options and the preferred alternative, it may be difficult to design an optimal training strategy.

ENDNOTES

1. Earlier articles that deal with these issues in a less comprehensive fashion include Davies (1986), Economic Council of Canada (1982), Gunderson (1974), Lees and Chiplin (1970), Mehmet (1970), and Newton (1977). The macroeconomic stabilization role of training (as opposed to the microeconomic efficiency issues) are discussed in Hughes (1972) and Thirwell (1972). Canadian estimates of the reduction in unemployment rates that occur because people are registered in training programs are provided in Maki (1972).

2. Optimal cost sharing arrangements, especially to deter unwanted turnover, are discussed in Coyte (1984), Donaldson and Eaton (1977) and Hashimoto (1981).

3. Davies (1986 p. 176) discusses such proposals in the Canadian context, indicating how they were recommended in the Allmand Report but analyzed and rejected earlier in the Dodge Report and abandoned earlier in Britain.

4. Training as a joint product of the firm is emphasized in Holtman (1971).

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